Piqua, Ohio, Decommissioned Reactor Site

Long-Term Surveillance and Maintenance Program

U.S. Department of Energy
Grand Junction Office

FACT SHEET

The Grand Junction Office has provided cost-effective and efficient stewardship for more than 10 years

Overview

During the mid-1960s, the Piqua Nuclear Power Facility reactor was built by the U.S. Atomic Energy Commission as part of the Power Demonstration Program. Between 1967 and 1969, the reactor was decommissioned and dismantled, and the radioactive portions of the facility were either removed or isolated from the environment. Responsibility for the long-term care of the entombed reactor was transferred from the U.S. Department of Energy (DOE) Chicago Operations Office to the Long-Term Surveillance and Maintenance (LTSM) Program at the DOE Grand Junction Office in 1998.

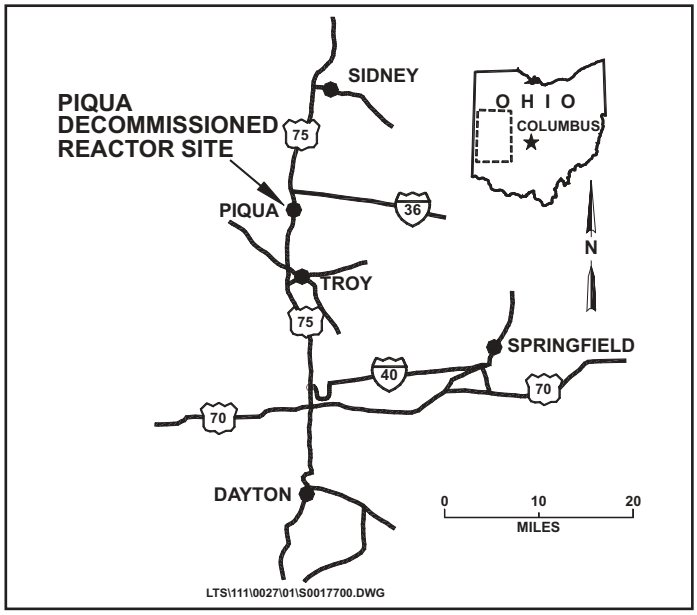
In 1988, DOE established the LTSM Program to provide stewardship of low-level radioactive material disposal sites after completion of environmental restoration activities. The mission of the LTSM Program is to ensure that the disposal encapsulation systems continue to prevent release of contaminated materials to the environment. These materials will remain potentially hazardous for thousands of years. As long as the impoundments function as designed, risks to human health and the environment are negligible.

The LTSM Program maintains the safety and integrity of the disposal sites through periodic monitoring, inspections, and maintenance; serves as a point of contact for stakeholders; and maintains an information repository for sites in the LTSM Program at the DOE Grand Junction Office.

Regulatory Setting

DOE holds title to the land and the entombed radioactive materials and is responsible for long-term custody and care of the facility and those materials. In 1968, the U.S. Atomic Energy Commission entered into a 50-year contract and lease agreement with the City of Piqua government. Under terms of this agreement, the U.S. Atomic Energy Commission and its successor agency, DOE, lease the land containing the Piqua Nuclear Power Facility to the city at no cost.

LTSM Program activities are structured to protect human health and safety by ensuring compliance with exposure limits established by Title 10 *Code of Federal Regulations* Part 20. Stewardship activities will continue until the radioactivity within the isolated areas decays to safe levels or can be removed safely.



The city is responsible for maintaining the portion of the land and structures that are not associated with radioactive materials. The city must permit DOE free and ready access to the premises at any time. The city shall not breach the barrier to the sealed radioactive source nor permit such activities by others. The city of Piqua administers the institutional controls at the site that prevent access to and dispersion of the isolated radioactive materials.

Piqua Decommissioned Reactor Site

The Piqua Decommissioned Reactor Site is located in southwestern Ohio (north of Dayton) in the southeastern portion of the city of Piqua in north-central Miami County. The site is contiguous to the Piqua Municipal Power Station.

The site location, on the east bank of the Great Miami River, lies above the elevation of the maximum-recorded flood. Approximately 8 feet of glacial till at the surface are underlain by 22 feet of Brassfield limestone, 20 feet of Richmond Formation shale and limestone, and impervious deeper bedrock. Groundwater beneath the site occurs mainly in the Richmond Formation shale.

The Piqua Nuclear Power Facility was a 45.5-megawatt (thermal), organically cooled and moderated nuclear reactor built and owned by the U.S. Atomic Energy Commission. It was operated by the City of Piqua

government under contract to the U.S. Atomic Energy Commission between 1963 and 1966. Reactor operations were discontinued by the U.S. Atomic Energy Commission in 1966. Between 1967 and 1969, the facility was dismantled and placed in a safe condition for retirement. The radiological monitoring program for the Piqua Nuclear Power Facility began in 1969.

The Piqua Nuclear Power Facility now consists of the reactor building and a connected auxiliary building. The reactor building is a vertical, cylindrical steel containment structure housing the reactor vessel, steam-generating equipment, and other components of the reactor heat-transfer system. The aboveground facilities are presently used by the City of Piqua government for offices, meeting rooms, and storage areas. The belowground portion of the facility, extending from the surface to a depth of 100 feet, consists of a massive, reinforced concrete structure containing the decommissioned reactor complex.

Reactor Decommissioning and Isolation

The reactor fuel and coolant and most of the radioactive materials were removed from the site. Contaminated piping and equipment inside the reactor building were removed or decontaminated. Radioactive materials remaining on site are integral parts of the reactor structure (i.e., the steel reactor vessel, the concrete shielding, and fixed components within the reactor vessel). The reactor vessel is contained within both a cavity liner and the 8-foot-thick concrete biological shield and is housed within the below-grade reinforced concrete structure that originally served as the Piqua Nuclear Power Facility containment building. A waterproof material was placed over the main floor of the reactor building and covered with a layer of concrete to prevent access to the areas containing the radioactive material and to seal those areas. Floor drains were capped and sump pumps were installed to remove any influx of water.

Entombment structures at the reactor facility were originally designed to provide shielding and containment for an operating reactor; these massive materials should remain structurally sound for an indefinite period of time. All seals applied to the reactor equipment during decommissioning were designed to last for at least 100 years.

LTSM Program Activities

The LTSM Program conducts annual inspections of this site to evaluate the overall condition of the structural features and to determine if actions are required to maintain site safety, integrity, and security. Radiological monitoring and reporting are conducted on an annual basis. The City of Piqua government, which occupies and uses the facility, controls access to the Piqua Nuclear Power Facility premises. There is currently no evidence of contamination being released from the facility to site soils, air, or groundwater, and groundwater monitoring is not required at the Piqua site.

Contacts

For more information about the LTSM Program or about the Piqua Decommissioned Reactor Site, contact

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http://www.gjo.doe.gov/programs/ltsm